

**Threatened and Endangered
Species Assessment
for a
Portion of TMS #301-00-00-011
Charleston County, South Carolina**

November 30, 2009

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1.0 INTRODUCTION:

The following report details methodology and an assessment of survey results for a threatened and endangered species survey completed on November 17, 2009, for an approximate 95 acre parcel of land located adjacent to Old Jacksonboro Highway in the Town of Ravenel, Charleston County, South Carolina (See Figure 1). The endangered species survey was conducted to determine the occurrence of, or potential for, animal and plant species federally listed as endangered or threatened to exist within the boundaries of the referenced site. Completion of this survey was directed by and complies with current state and federal regulations [Federal Endangered Species Act of 1973 (16 USC 1531-1543), the South Carolina Non-Game and Endangered Species Conservation Act of 1974 (58-2384), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (16 U.S.C. 703-712)].

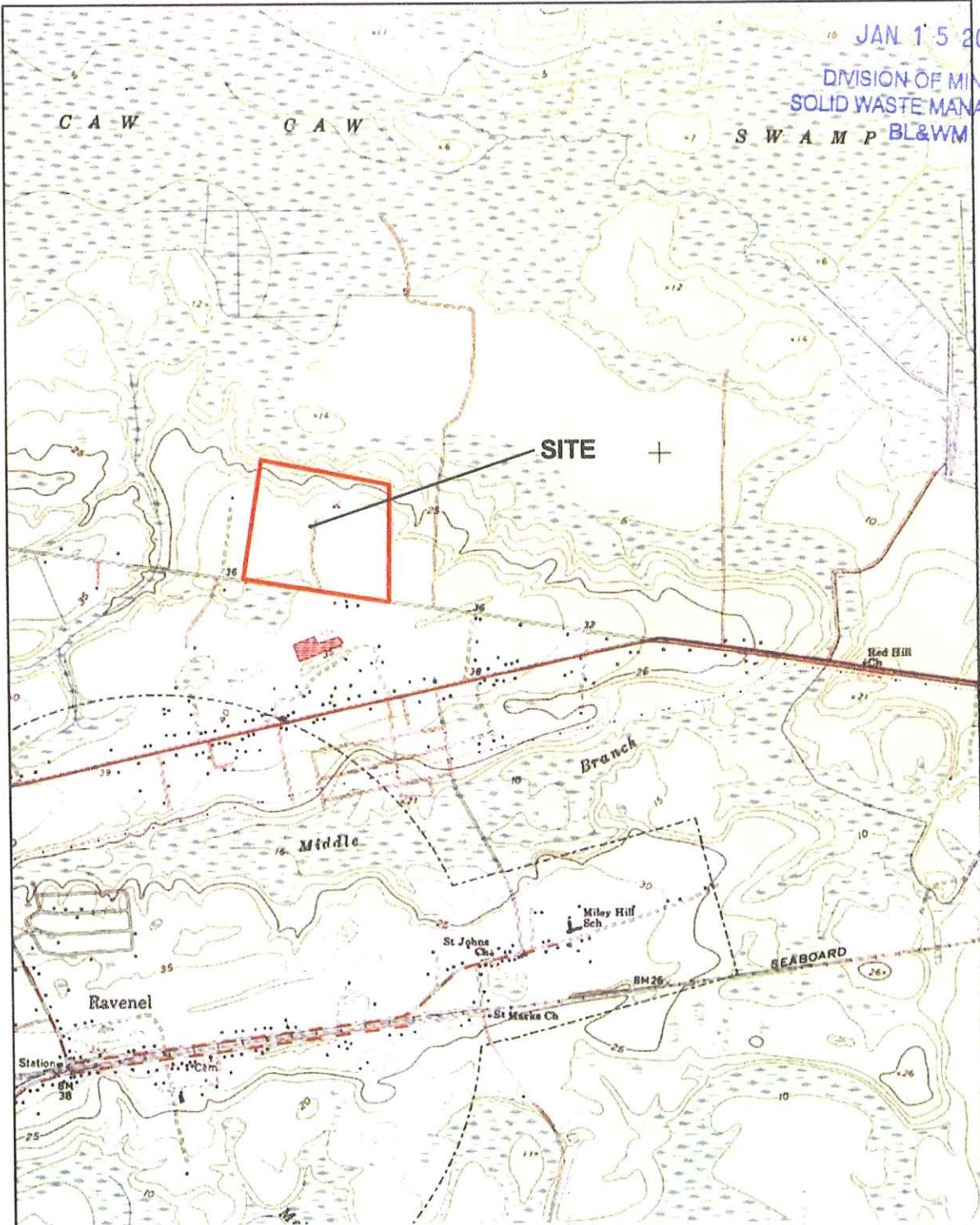
2.0 METHODOLOGY:

The following threatened and endangered species are listed by the US Fish & Wildlife Service as occurring in, or potentially occurring, in Charleston County, South Carolina:

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Figure 1
Location Map

Project #: 01-2788c
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Common Name	Scientific Name	Federal Status
West Indian Manatee*	<i>Trichechus manatus</i>	Federally Endangered
Wood stork	<i>Mycteria americana</i>	Federally Endangered
Red-cockaded woodpecker	<i>Picoides borealis</i>	Federally Endangered
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Federally Protected**
Bachman's warbler	<i>Vermivora bachmanii</i>	Federally Endangered
Piping plover*	<i>Charadrius melodus</i>	Federally Threatened
Seabeach amaranth*	<i>Amaranthus pumilis</i>	Federally Threatened
Canby's dropwort	<i>Oxypolis canbyi</i>	Federally Endangered
Pondberry	<i>Lindera melissifolia</i>	Federally Endangered
American Chaffseed	<i>Schwalbea americana</i>	Federally Endangered
Loggerhead sea turtle*	<i>Caretta caretta</i>	Federally Threatened
Kemp's ridley sea turtle*	<i>Lepidochelys kimpri</i>	Federally Endangered
Leatherback sea turtle*	<i>Cermochelys coriacea</i>	Federally Endangered
Green sea turtle*	<i>Chelonia mydas</i>	Federally Threatened
Flatwoods salamander	<i>Ambystoma cingulatum</i>	Federally Threatened
Shortnose sturgeon *	<i>Acipenser brevirostrum</i>	Federally Endangered

* Eliminated from survey based upon broad habitat requirement.

**Protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (16 U.S.C. 703-712).

Existing data from the South Carolina Department of Natural Resources (DNR) was reviewed to locate recorded occurrences of threatened and endangered species within or near the subject site. At the time of this report, there is no documentation of any federally threatened or endangered species within or immediately adjacent to the referenced tract. As noted by DNR, their records are not assumed complete nor should they be assumed comprehensive; therefore, field surveys should be conducted for more thorough evaluations. A number of species known to occur in Charleston County were eliminated from the survey based upon broad habitat requirements. These species are indicated by an asterisk in the above list. The remaining listed species were included in the assessment.

As noted, field surveys to identify suitable habitat were conducted on November 17, 2009. During the field surveys, plant communities and habitats were observed and noted to determine if they matched habitat types where the listed species have the potential to occur. If potential habitat was identified at the site, all species observed were, at a minimum, identified to the genus taxonomic level.

A survey for the Red-Cockaded Woodpecker was conducted using the "Guidelines for the

Preparation of Biological Assessments and Evaluation for the Red-Cockaded Woodpecker", V. Gary Henry. These guidelines include methods for identifying areas to survey as well as actual survey methods for determining the presence of the Red-Cockaded Woodpecker. The guidelines state that timber stands exhibiting any of the following criteria should be surveyed when making a determination for the occurrence of Red-Cockaded Woodpeckers. The criteria are:

- * mixed pine hardwood stands over 60 years of age
- * mixed pine and hardwood stands under 60 years of age that contain clumps of pine trees over 60 years of age
- * stands containing pine saw timber, including stands thought to be less than 60 years of age but containing scattered or clumped trees over 60 years of age
- * hardwood-pine over 60 years of age adjacent to pine and pine-hardwood over 30 years in age

3.0 HABITAT CLASSIFICATIONS:

The following is a description and classification of major habitat/community types identified within the site. Also noted is an assessment of suitability for federally listed threatened and endangered species.

3.1 Mixed Pine / Hardwood

The mixed pine hardwood community is located in small sections throughout the tract. The vegetative community within the site is dominated by overstory species that include loblolly pine (*Pinus taeda*), long-leaf pine (*Pinus palustris*), water oak (*Quercus nigra*), southern red oak (*Quercus falcate*), and sweet gum (*Liquidambar styraciflua*). The understory has been shaded out by the dense canopy however it does contain shrub species such as wax myrtle (*Myrica cerifera*), and a number of blueberry species (*Vaccinium spp.*). Due to the overstory density that occurs within this community, it does not offer suitable habitat for any of the species listed as occurring in Charleston County nor were any of the federally listed species observed during field surveys.

3.2 Pine Plantation

The pine plantation community begins at the front of the property near Old Jacksonboro

Road and meanders towards the back of the tract. This community is dominated by planted loblolly pine of approximately 10 to 15 years in age. The understory consists of woody shrubs and tree species that include sweet gum, water oak, wax myrtle, inkberry (*Ilex glabra*), red bay (*Persea borbonia*), and southern red oak. Herbaceous species within this community is sparse due to the dense canopy. This community type does not provide suitable habitat for any of the listed species that potentially occur in Charleston County.

3.3 Upland Hardwood

The oak dominated hardwood community that is present on the site covers a large majority of the center portion of the property. The overstory within this community contains southern red oak, water oak, live oak (*Quercus virginiana*), and sweet gum. The midstory is fairly open with scattered shrubs that include highbush blueberry (*Vaccinium corymbosum*), and inkberry (*Ilex glabra*). This community does not provide suitable habitat for any of the listed species.

3.4 Wetland

The wetland found onsite is associated with slope seeps that occur along the northern edge of the tract. These areas are fairly dense with midstory vegetative species. The dominate species within this community includes red bay, sweet bay (*Magnolia virginiana*), fetter bush (*Lyonia lucida*), Virginia chain-fern (*Woodwardia virginica*), and wax myrtle. Due to the understory and midstory density of this community it does not provide suitable habitat for any of the listed species potentially occurring in Charleston County.

4.0 LISTED SPECIES AND ACKNOWLEDGED HABITATS:

The following is a brief description of each listed species included in the survey, its recognized habitat and comments regarding survey results for that species.

4.1 Wood Stork (*Mycteria americana*)

The wood stork is a large wading bird characterized by its featherless head and black and white markings. This species nests in colonies known as rookeries and roosts and feeds in flocks, often in association with other species of long-legged water birds. Wood storks utilize freshwater and estuarine wetlands for feeding, nesting and roosting. These sites

are utilized for many years and are characterized by woody vegetation or primary cypress or swamp hummocks over open water (USFWS Ogden).

Only a few nesting sites (rookeries) are known in South Carolina, none of which are within or near the site. However, because this species covers vast areas during active foraging, it may occur over a broad region. Wood storks commonly feed throughout the estuarine marshes along the coast and are frequently observed in the surrounding areas during the summer months. Estuarine marshes and impoundments tend to be preferred foraging habitat, however, this species will also use open mature forested wetlands. Woodstorks are known to forage in nearby wetlands however, the onsite wetlands do not offer suitable foraging habitat for this species.

4.2 Red-Cockaded Woodpeckers (*Picoides borealis*)

Red-Cockaded Woodpeckers are small birds requiring old growth pine forest for cavity excavation, foraging and nesting. The particular habitat associated with this species requires many years to develop and is fire dependant to maintain open mid-story conditions. Due to the density of the overstory and understory vegetation there is no suitable foraging or nesting habitat for the Red-Cockaded Woodpecker on-site.

4.3 Bald Eagle (*Haliaeetus leucocephalus*)

The Bald Eagle was delisted from the Endangered Species Act on June 28, 2007. However, the bald eagle remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Both federal laws prohibit the “taking” –killing, selling, or otherwise harming eagles, their nests or eggs. As a result, Newkirk Environmental, Inc. has included this species in this report as any federal actions will likely require coordination with the US Fish and Wildlife Service and/or SCDNR.

The eagle is a very large raptor with a wingspread of nearly 7 feet. This bird is normally associated with coasts, rivers and lakes with adjacent suitable nesting habitat.

Comprehensive tree-by-tree surveys for eagle nests were not conducted during this survey, however, based upon SCDNR records, no eagles are known to nest in this property or within 1500 feet of this property at the time of this survey.

4.4 Bachman's warbler (*Vermivora bachmanii*)

Bachman's warbler is the rarest songbird in North America. The Bachman's warbler prefers nesting in shrubs in bottomland hardwood forests and winters in Cuba. Last confirmed in 1961, this species is likely extinct. At about four inches, the male

Bachman's warbler has an olive green back and yellow face and underside with black patches on the throat and crown. The smaller female lacks the black throat patch and has a yellow forehead and throat with a grayish crown. The preferred habitats for this bird are low, wet, bottomland hardwood forest with a dense understory. No suitable habitat for this species was observed on site.

4.5 Canby's dropwort (*Oxypolis canbyi*)

Canby's dropwort is a medium sized shrub found in the coastal plain of South Carolina where it occupies pond savannahs, the shallow edges of cypress/pond pine sloughs and wet pine savannahs. These sites are characterized by open conditions with savannah like herbaceous layers and are almost always associated with a sandy loam or loam soil underlain with a clay layer. Additionally, these sites require that the groundwater regime remain stable and that the sites must be protected from adverse alterations such as ditching, dams, etc.

The white flower of this species is noted as occurring from May through August, although past surveys indicate blooming in this region occurs during late July-October. The onsite wetlands are not characterized as wet pine savannahs and do not provide suitable habitat for Canby's dropwort.

4.6 Pondberry (*Lindera melissifolia*)

Pondberry is a small fragrant shrub also found in and around small depressional wetlands and sinks with a semi-open canopy. This species is most often detected by its thin, drooping, elliptical shaped leaves and small, oval shaped, red berries. Pondberry normally blooms in March with the fruit maturing around October. Surveys for this species and its habitat were completed in concert with the surveys for Canby's dropwort. Surveys for this species and its habitat were completed in concert with the surveys for Canby's dropwort. The onsite wetland are not considered suitable habitat for pondberry.

4.7 American chaffseed (*Schwalbea americana*)

American chaffseed is an upland herbaceous species with large purple or yellow tubular flowers. In the southeast flowers usually occur from April until June. This species is indigenous to open fire maintained pine forest. Typical indicator species include blackjack oak (*Quercus marilandica*) and goat's rue (*Tephrosia virginiana*) as dominates. This species thrives in sandy acidic soils that are seasonally moist. Due to the dense canopy of overstory species and lack of fire maintenance, suitable habitat was not found

onsite.

4.8 Flatwoods salamander (*Ambystoma cingulatum*)

The Flatwoods Salamander requires open, mesic woodlands of longleaf pine (*Pinus palustris*) and slash pine (*Pinus elliottii*) maintained by frequent fire. Pine flatwoods are typically flat, low-lying open woodlands that lie between the drier sandhill community up slope and the wetlands down slope. Wiregrasses (*Aristida spp.*), especially *Aristida beyrichiana*, are often the dominate grasses in the herbaceous layer. Adult flatwoods salamanders move to their wetland breeding site during the rainy weather from October to December. The breeding sites are isolated pond cypress (*Taxodium ascendens*), swamp gum (*Nyssa biflora*), or slash pine dominated depressions which dry up completely on a cyclic basis. These wetlands are generally shallow and relatively small and have a marsh-like appearance with sedges (*Carex spp.*) growing throughout; wiregrasses, panic grasses (*Panicum spp.*) and other herbaceous species concentrated in shallow water edges. A relatively open canopy is necessary to maintain the herbaceous species component which serves as cover for the flatwoods salamander larvae. Because the property has no freshwater wetlands that are conducive for the flatwoods salamander or mature longleaf/slash pine forests, there is no suitable habitat on site for the flatwoods salamander.

5.0 CONCLUSION

No threatened or endangered species were observed during this survey. It is the opinion of Newkirk Environmental, Inc. that based upon the findings of this survey and report; proposed use of the referenced tract is not likely to cause an adverse impact to threatened and endangered species that potentially occur in Charleston County.

It should be noted that because of the transitory nature of some of the listed threatened and endangered plants and animals, it is possible that endangered species populations and locations may change over time. Therefore, any potential findings at a later date should be fully investigated. Should significant time lapse between the issuance of this report and development of the property or any other type of legal reliance, it is strongly recommended that an update of this report be completed. The definition of significant time is not absolute but would include passing of annual breeding or migratory seasons.

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Upland Hardwood



Wetland



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Mixed Pine / Hardwood



Pine Plantation

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